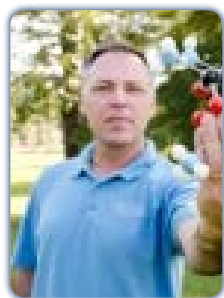


2<sup>nd</sup> International Conference and Exhibition on

# POLYMER CHEMISTRY

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## Joseph D Lichtenhan

*Hybrid Plastics Inc., USA*

### POSS® epoxy and acrylic additives for optical coatings

**Statement of the Problem:** The polymer industry and its products are primarily based on a limited pool of hydrocarbon feedstocks that were last advanced in the 1950's with the development of arene-based monomers. Since then, it has become axiomatic in the polymer industry to regard the development of new resins as too capital-intensive and fraught with risk with regard to ultimate market acceptance. Furthermore, the imperatives for manufacturing to maintain, economics, quality, supply chain integrity and global EH&S registrations, distribution and a "heritage" psychology further restrict the commercialization of new polymer technology. Juxtaposed with the above philosophy is the reality that the search and pull for new polymeric technology by formulators and product manufacturers is intense and the rewards from new chemical and polymer ingredients is economically and technically large. In response to this need, families of POSS® chemical additives were industrialized. Each POSS cage melds the desirable thermal stability, modulus of inorganic additives (SiO<sub>1.5</sub>) with organic (R) compatibility to render utility with heritage polymers, resins, monomers and ingredients. In light of the interest spectrum, POSS epoxy and acrylic coating additives provide a simple to use tool-kit that requires only small loading levels of POSS to favorably improve traditional formulations. At only 1.5 nm in diameter, POSS cages provide a large amount of surface area and volume control when incorporated into formulations. The control of surface area and volume in coatings leads to improved flow, adhesion, environmental durability and effects ranging for optical clarity, low friction, low surface energy and compatibility of key ingredients. The mechanism of action of POSS additives in optical coatings, along with its comparative performance relative to common ingredients will be presented.

### Biography

Joseph D Lichtenhan is a Co-Founder of Hybrid Plastics Inc. and served at its CEO and President for 18 years. He is a pioneer and world authority in the field of POSS® additives. POSS has been hailed as the first entirely new chemical class of monomers to be developed since 1955. His insights into their commercial utility launched the global sales for POSS® in 1998. He has excelled at technology transition and the establishment of a global footprint for POSS® via innovative sales and marketing techniques.

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### Notes: